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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,154	09/29/2003	John Landers	M0656.70098US00	7775

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EXAMINER	
SALMON, KATHERINE D	

ART UNIT	PAPER NUMBER
1634	

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02/23/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/676,154	LANDERS ET AL.	
	Examiner	Art Unit	
	KATHERINE SALMON	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *149-160,165 and 166* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/24/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to papers filled 10/24/2008 and 8/05/2008.

2. Currently Claims 1-148, 161-164 have been cancelled. Claims 149-160 and 165-166 are pending.

3. The following rejections to Claims 149-160 and 165-166 are reiterated or newly applied. Response to arguments follows.

4. This action is NONFINAL.

Withdrawn Rejections

5. The rejections of Claims 149-160 under 35 USC 103(a) made in sections 9-14 are withdrawn based upon the limitation that the RCG contains less than 20% of the genomic material present in the whole genome. The reduced complexity genome taught by Cheung et al. is larger than the 20% requirement. Specifically, Cheung et al. teaches using a DOP primer with a 6 nucleotide tag on the 3' end (p. 14676 last full paragraph). The instant specification discloses that the complexity of the resultant product when using 6 nucleotide tag on the 3' end is extremely high due to the short length, whereas the complexity of the genome is significantly reduced using 7 or 8 nucleotides on the 3' end (p. 73 liens 17-24). Cheung et al. teaches that 200 to 1000 bp fragments were produced (p. 14677 1st column 2nd paragraph). Cheung et al. teaches that only 1 of every 10 200-1000 bp pairs stretches of the human genome is amplified (p. 14678 2nd column last paragraph). Cheung et al. teaches that the human genome is about 3×10^9 bp. Therefore one would expect the complexity of the Cheung et al. genome of

about 20% in the samples in which 200 bp fragments are produced and higher complexity as the bp fragments get larger. Therefore Cheung et al. teaches that at least about 10% is amplified and as much as 20% is amplified. The goal of Cheung et al. is to detect as much of the genome as possible, and therefore Cheung et al. teaches away from the detection of less than 20% as in the claims because the ordinary artisan would not be motivated to modify Cheung et al. to detect less than 20% of the genome. As such the ordinary artisan would not be motivated to use the longer primers to amplify less of the genome. However, Cheung et al. does teach a reduced complexity genome because the primer combination of Cheung et al. does not amplify the entire genome, but rather a reduced portion of the genome.

Information Disclosure Statement

6. The information disclosure statement (IDS) which was submitted on 10/24/2008 has been considered. The submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Interview summary

7. The reply filed on 10/24/2008 is fully responsive and it includes a complete or accurate record of the substance of the telephone interview of 10/21/2008.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 165-166 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheung et al. (Proceedings National Academy Science 1996 Vol 93 p. 14676) in view of Nikiforov et al. (WO 95/15970 June 15, 1995).

The instant application defines the term "RCG" on p. 16 lines 22-30 as a reproducible fraction of an isolated genome which is composed of a plurality of DNA fragments (lines 22-23).

With regard to Claim 165, Cheung et al. teaches using DOP-PCR amplification to produce genomic fragments (p. 14676 2nd column DOP amplification). Cheung et al. teaches that the PCR reaction uses a DOP primer, which is degenerative (p. 14676 2nd column DOP amplification). Cheung et al. teaches that arbitrary portions of the DNA sequences are amplified by this method (p. 14676 2nd column 1st paragraph).

Cheung et al. characterizes the DOP-PCR method as whole genome amplification, however, the methodology of Cheung et al. actually teaches that only portions of the genome is amplified and therefore less the whole genome is amplified. Cheung et al. teaches that 200 to 1000 bp fragments were produced (p. 14677 1st column 2nd paragraph). Cheung et al. teaches that only 1 of every 10 200-1000 bp pairs stretches of the human genome is amplified (p. 14678 2nd column last paragraph). Cheung et al. teaches that the human genome is about 3×10^9 bp. Therefore Cheung et al. teaches amplification of less than the whole genome. Further Cheung et al. teaches that the fractions are amplified and a plurality of fragments are produced(p. 14676 2nd column 1st paragraph), therefore Cheung et al. teaches RCG fragments as defined by the instant specification because Cheung et al. teaches amplification of less than the entire genome.

Cheung et al suggest that DOP-PCR amplified samples (e.g. the randomly-primed PCR derived RCG fragments) may be successfully used in genetic analyses such as sequencing and single stranded conformation

polymorphism. However, Cheung et al. does not teaches method steps of using such RCG fragments to detect SNPs or to genotype.

Nikiforov et al. teaches a method of using a solid support immobilized with nucleic acid molecules for polymorphic analysis and sequencing (e.g. genotyping) (abstract).

With regard to Claim 165, Nikiforov et al. teaches a method wherein a single stranded PCR product is prepared before hybridization (p. 14 lines 17-18). However, ordinary artisan would be motivated to use the RCG amplified segment of Cheung et al. in replacement of Nikiforov et al. PCR derived genetic product, because Cheung et al. teaches that these DOP-PCR amplified samples could be used in methods of genetic analyses. Nikiforov et al. teaches that this complex can be used to detect SNP alleles (p. 31 lines 15-18).

Nikiforov et al. teaches hybridizing the PCR derived complex to capture probes (e.g. arrayed panel of oligonucleotides) to detect the specific products (p. 14 lines 13-15). Nikiforov et al. teaches that the hybridization patterns determined the presence or absence of the SNP (p. 31 lines 15-18).

With regard to Claim 166, Nikiforov et al. teaches a method wherein a single stranded PCR produce is prepared before hybridization (p. 14 lines 17-18). Therefore Nikiforov et al. teaches preparing a PCR derived complex from genomic DNA. Nikiforov et al. teaches that the practice can be used to sequence (p. 15 lines 35-38) and therefore Nikiforavo et al. teaches that the sample can be genotyped.

Nikiforov et al. teaches hybridizing the PCR derived complex to capture probes (e.g. arrayed panel of oligonucleotides) to detect the specific products that have the presence or absence of a SNP (p. 14 lines 13-15 and p. 31 lines 15-18). Therefore the panel of oligonucleotides comprises alleles (oligonucleotides) that are specific for a particular SNP. Nikiforov et al. teaches that the PCR complex hybridizes to the oligonucleotides (p. 31 lines 15-18) and therefore the oligonucleotides comprise a SNP allele which is specific for the PCR complex.

Therefore it would be prima facie obvious to modify the method of Nikiforov et al. which involves detecting SNPs using a microarray using PCR amplified fragments of DNA by using randomly-primed PCR derived RCG fragments taught by Cheung et al. Cheung et al. suggests that the ordinary artisan would be motivated to try using the DOP-PCR amplified samples (e.g. the randomly-primed PCR derived RCG fragments) in other PCR based genetic analyses such as sequencing and single stranded conformation polymorphism (p. 14678 2nd column 1st paragraph). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use randomly primed PCR derived RCG fragments in a method of using PCR product complexes to hybridize to oligonucleotides immobilized on an array to detect SNPs with a reasonable expectation of success because the prior art of Cheung et al suggest that DOP-PCR amplified samples (e.g. the randomly-primed PCR derived RCG fragments) may be successfully used in genetic analyses such as sequencing and single stranded conformation polymorphism.

Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 149-160, 165-166 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-27 of U.S. Patent No. 6703228. Although the conflicting claims are not identical, they are not patentably distinct from each other.

The instant Claim 149 contain the same method steps as Claims 1-2 and 4 of Patent No. 6703228 (herein called '228), except the instant Claim requires that the RCG contains less than 20% of genomic material present and a loci corresponding to the SNP-ASO present with a frequency of at least 50% in the RCG.

Claims 39-40 of the '228 patent requires a reduced complexity of 95% or 99%. Therefore the RCG will contain less than 20% of the genomic material present.

Claim 25 of the '228 patent requires detect the presence or absence of an allele. Therefore the claim requires using SNP ASOs wherein 50% of the time they are in the RCG (frequency is at least 50%).

Therefore Claims 1-2, 4, 39-40, and 25 of the '228 contain all the limitations of the instant applications Claim 149.

Claims 150-152 are obvious over Claims 39-40 of the '228 patent.

Claims 153 of the instant application is obvious over Claim 29 of the '228 patent.

Claim 154 of the instant application is obvious over claim 33 of the '228 patent.

Claim 155-156 of the instant application is obvious over claims 20-21 of the '228 patent.

Claim 157 of the instant application is obvious over the combination of the limitations of Claims 1-2, 4, 25, and 39-40 of the '228 patent and claim 27 of the '228 patent wherein the sample is obtained from a tumor.

Claims 158 is obvious over Claims 39-40 of the '228 patent.

Claims 159 of the instant application is obvious over Claim 29 of the '228 patent.

Claim 160 of the instant application is obvious over claim 33 of the '228 patent.

Claims 165-166 contain the same method steps as the combination of the limitations of Claims 1-2, 4, 25, and 39-40 of the '228 patent.

Response to Arguments

In the reply filed 8/05/2008 acknowledged the obvious double patient rejection and does not present arguments in traverse (p. 15 last two paragraphs). The reply asserts that applicant will submit a terminal disclaimer prior to allowance, however, as of the date of this mailing a terminal disclaimer has not been submitted.

Conclusion

12. No Claims are allowed.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine Salmon whose telephone number is (571) 272-3316. The examiner can normally be reached on Monday-Friday 8AM-430PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine Salmon/
Examiner, Art Unit 1634

/Juliet C Switzer/

Primary Examiner, Art Unit 1634